WYROWSKI
VirtualLab FUSION
FAST PHYSICAL OPTICS SOFTWARE

LightTrans talk at LASER 2019

Innovative Systematic Design Approach for Lightguide Devices for XR-Applications

LASER World of Photonics Congress | EDO19 | DOT101

Session time: **25 June 2019 | *time coming soon***

Paper authors: Christian Hellmann[1], Stefan Steiner[2], Roberto Knoth[2], Site Zhang[2], and Frank Wyrowski[3]
[1] Wyrowski Photonics GmbH | Jena, Germany
[2] LightTrans International UG | Jena, Germany
[3] Applied Computational Optics Group, Friedrich Schiller University | Jena, Germany,

Presenting author: *Coming soon*

Abstract

For applications in the field of XR, devices based on light guiding are one beneficial approach to combine the virtual image with the light impinging from the real-world environment. Usually, lightguide devices like AR glasses are quite complex, due to the required management of a large field of view and light of different wavelengths. Due to this complexity, numerous parameters must be considered in order to design a functional device which provides a sufficient image quality and optical performance. In the talk we are going to present a systematic approach to design lightguide devices including different types of grating structures used for in- and out-coupling of the light. We will show, that this systematic approach, which is enabled by the fast physical optics technology of VirtualLab Fusion software, allows to combine the benefits of functional and parametric design and optimization strategies. Typical design tasks are discussed in detail, e.g. the trade-off between uniformity and system efficiency. In the talk, the design approach and the capabilities of the Field Tracing technology of VirtualLab Fusion are demonstrated based on various examples.